

## Tunable High-Power Single-Frequency Laser at 2050 nm, Phase II

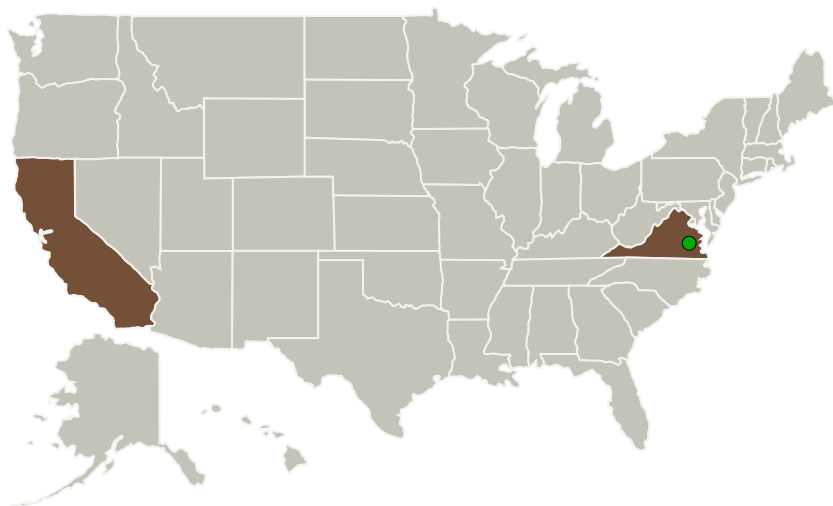
Completed Technology Project (2015 - 2018)



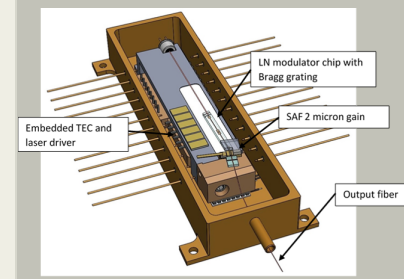
## Project Introduction

We propose a novel new architecture for a low-phase noise electronically tunable laser single-frequency laser at 2.05 microns that meets all the demanding requirements as a seed laser for NASA Lidar applications measuring CO<sub>2</sub> densities in the atmosphere. The laser technology is based on previously developed hybrid integration technology that enables the direct optical coupling of active and passive waveguide chips. Array scaling was previously demonstrated for a 4-channel IFOG optical engine and this technology will be applied to the development of the array-scalable tunable laser. The proposed tunable laser can address LIDAR applications at 2.05 microns and can be modified to any wavelength spanning the range of 640-2500 nm.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Gener8, Inc.	Lead Organization	Industry	Sunnyvale, California
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



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## Primary U.S. Work Locations

California

Virginia

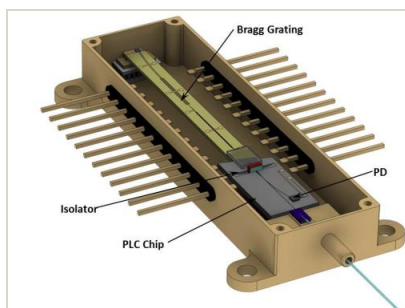
## Project Transitions

**May 2015:** Project Start**July 2018:** Closed out

## Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/140740>)

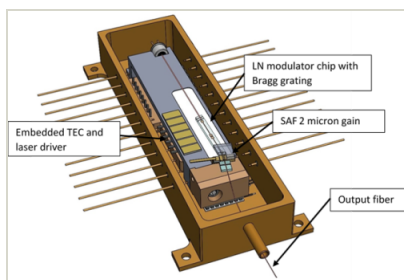
## Images



## Briefing Chart

Tunable High-Power Single-Frequency Laser at 2050 nm  
Briefing Chart

(<https://techport.nasa.gov/image/133299>)



## Final Summary Chart Image

Tunable High-Power Single-Frequency Laser at 2050 nm, Phase II

(<https://techport.nasa.gov/image/133262>)

## Organizational Responsibility

## Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

## Lead Organization:

Gener8, Inc.

## Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

## Program Director:

Jason L Kessler

## Program Manager:

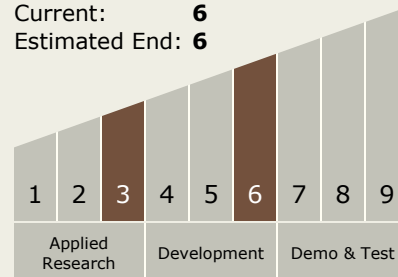
Carlos Torrez

## Principal Investigator:

William Bischel

## Technology Maturity (TRL)

Start: 3  
Current: 6  
Estimated End: 6



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## Technology Areas

### Primary:

- TX08 Sensors and Instruments
  - └ TX08.1 Remote Sensing Instruments/Sensors
    - └ TX08.1.5 Lasers

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System